

## YEAR 1881

Eight storms were identified as having occurred in 1881. Tracks for these storms are presented in Fig. 1.

### Storm 1, 1881 (Aug. 1-4).

The following information was found in relation to this storm: 1) Winds at Port Eads: 34 mph on Aug. 1, 40 mph on Aug. 2, 40 mph on Aug. 3, 27 mph on Aug. 5. Rainfall: 7.12 inches from midnight Aug. 4 to the morning of Aug. 6 (Monthly Weather Review, Aug. 1881). Winds at Pensacola: 32 mph on Aug. 2, 40 mph on Aug. 3, 28 mph on Aug. 5. Rainfall: 10.41 inches on Aug. 2 and 3, 5.54 inches on Aug. 4 and 5. (Monthly Weather Review, Aug. 1881). 3) Mobile: 40 mph on Aug. 8 (?). Rainfall: 6.20 inches on Aug. 3 and 6.66 inches on Aug. 4 and 5 (Monthly Weather Review, Aug. 1881). Author's note: Aug. 8 might be in error. 4) Indianola: 30 mph on Aug. 1 and 38 mph on Aug. 6 (Monthly Weather Review, Aug. 1881). Author's note: The Indianola winds might not be directly associated with the storm. 5) Pensacola, Aug. 5. A storm has lulled but very heavy rainshowers continue. Signal Sergeant Mc Gouran said that from Aug. 2 to 9:30 A.M. today, 15.80 inches fell. Heavy rains have been also reported at Mobile and Port Eads, but decidedly less than the amount reported in this vicinity (The New York Times, Aug. 6, 1881, p.2, col.4).

The information contained in the above items was not found to contradict the track for this storm given in Neumann et al. (1993). Therefore, such a track is reproduced in Fig. 1.

Indications are that the storm was of mild intensity but that it was rather a very wet one.

### Storm 2, 1881 (Aug. 11-14).

Very little information was found about this storm. It is suspicious that the Monthly Weather Review has not mentioned this storm. However, Dunn and Miller (1960) has listed it as having occurred at Padre Island (Lower Texas coast) on Aug. 12-13 and, although the term "violent" was quoted, the above mentioned authors indicated that it was a tropical cyclone of minimal intensity. Therefore, the author of this study is skeptical about the true nature of this storm. Nevertheless, he decided to keep it on record by reproducing in Fig. 1 the track that Neumann et al. (1993) show in their tropical cyclone catalog. No modification was introduced to such a track in spite of that some adjustment in the storm motion along the track would have been necessary to satisfy the days of occurrence at Padre Island given by Dunn and Miller (1960).

### Storm 3, 1881 (Aug. 11-18).

This is a new storm which the author of this study has recently documented.

Documentation of this storm was based on the following information: 1) The brigantine "Fonthill" arrived at Le Havre from

Santos (Brazil). The vessel encountered a tremendous hurricane with a heavy cross sea lasting 7 hours on Aug. 11 in lat. 15 58 N., long. 33 15 W. All sails which were loose were lost and the vessel was for some time on her beam ends (The Times, London, Sept. 23, 1881, p.10, col.5). 2) The Spanish brigantine "Theresa", from Guiria to Barcelona, encountered a heavy gale, Aug. 18, in lat. 34 N., long. 49 W. and the fore and main masts were cut away (The Times, London, Oct. 3, 1881). Author's note: Guiria is a port on the northeastern coast of Venezuela. Being a Spanish vessel, it is possible that the longitude given might have referred to the San Fernando meridian and, if this were the case, the longitude would be about 55 degrees W. of Greenwich; however, longitude 49 W. fits better a Guiria-Barcelona route.

Based on the information above, the author of this study proposes the track for this storm which is shown in Fig. 1. The track was started on Aug. 11 with an estimated 7 A.M. position near 16.0 degrees N., 33.0 degrees W. on the basis of item 1) and ended on Aug. 18 with an estimated 7 A.M. position near 34.0 degrees N., 51.0 degrees W. on the basis of item 2), after having assumed that the longitude given by the "Theresa" was in reference to the Greenwich meridian. Estimated 7 A.M. positions for Aug. 12 to Aug. 17 were obtained by interpolation along the smooth curve shown in Fig. 1. These positions were: Aug. 12, 16.3 degrees N., 37.3 degrees W.; Aug. 13, 17.7 degrees N., 41.7 degrees W.; Aug. 14, 20.0 degrees N., 45.5 degrees W.; Aug. 15, 23.3 degrees N., 48.5 degrees W.; Aug. 16, 26.7 degrees N., 50.5 degrees W.; Aug. 17, 30.5 degrees N., 51.3 degrees W. As the interpolation procedure was extended for several days, the confidence the author of this study had on his estimated 7 A.M. positions was rather low, particularly over the period Aug. 13-16.

Based on the information given by the "Fonthill" (item 1), Storm 3, 1881 attained hurricane intensity.

Storm 4, 1881 (Aug. 16-21).

This is the same storm that Neumann et al. (1993) show as Storm 3, 1881.

The following information was found in relation to this storm: 1) Port Eads, wind 25 mph on Aug. 16; Cedar Keys, wind 27 mph on Aug. 17; Punta Rassa, wind 28 mph on Aug. 17; Key West, wind S. 27 mph on Aug. 16 and N.E. 28 mph on Aug. 17. Heavy rain fell at Key West and Punta Rassa (Monthly Weather Review, Aug. 1881). 2) Capt. Sanson of the steamship "Highbury", which arrived yesterday from Havana and Matanzas, reports that severe storms prevailed for the last few days in the vicinity of the West Indies. The "Highbury" experienced 3 days of heavy N. gales with head seas. The wind sometimes shifted to N.E. causing a very uneven sea (The New York Times, Aug. 20, 1881, p.8, col.7). 3) Portsmouth, N.H., Aug. 22. The steamer "Cohasset" arrived Sunday afternoon (Aug. 21) from Boston Navy-yard, after spending 46 hours on the passage because she had heavy seas (The New York Times, Aug. 23, 1881, p.2, col.7). 4) German ship "Anna", which arrived from Liverpool yesterday, encountered a heavy gale from E.S.E. which veered to N.W. and continued for 16 hours, causing a tremendous cross sea. It occurred

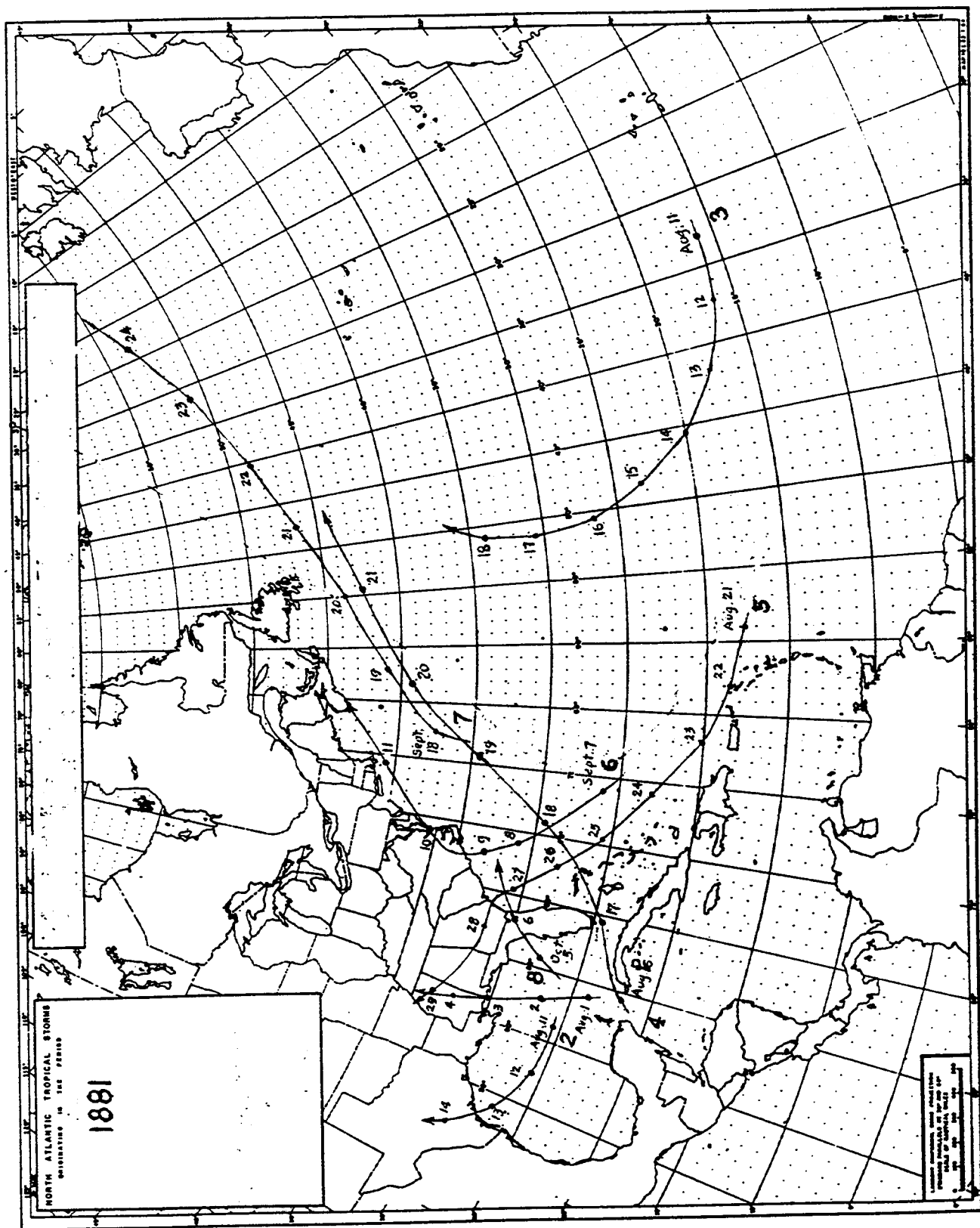


Fig. 1

on Aug..21 at lat. 42 33 N., long. 54 27 W. (The New York Times, Sept.6, 1881, p.8, col.2). 5) Map showing a track for the storm over the Gulf of Mexico and southern Florida. Selected positions along the track are near lat. 23.5 N., long. 86 W. at 11 P.M. Aug. 16 and near lat. 26.5 N., long. 81.7 W. at 11 P.M. Aug. 17 (Monthly Weather Review, Aug. 1881).

Based on the information above, some modifications were proposed along the track shown in Neumann et al. (1993) as for Storm 3, 1881. The track proposed by the author of this study was started near 22.0 degrees N., 85.5 degrees W. at 7 A.M. Aug. 16, which is the same location given by the above mentioned authors. The author's 7 A.M. Aug. 17 estimated position was, however, about 150 miles to the east of the position shown by Neumann et al. (1993); the wind change from S. 27 mph on Aug. 16 to N.E. 28 mph on Aug. 17 reported to have occurred at Key West (item 1) supported the author's 7 A.M. Aug. 17 estimated position and indicated that the storm was still in its early stages of development. The author's 7 A.M. estimated positions over the period Aug. 18-20 were based on information contained in items 2) and 3) as well as on space-time continuity to the 7 A.M. Aug. 21 estimated position, which was based on the report provided by ship "Anna" (item 4). Author's 7 A.M. estimated positions were as follows: Aug. 17, 24.5 degrees N., 80.5 degrees W.; Aug. 18, 29.5 degrees N., 74.0 degrees W.; Aug. 19, 34.5 degrees N., 69.5 degrees W.; Aug. 20, 39.3 degrees N., 63.3 degrees W.; Aug. 21, 42.5 degrees N., 54.5 degrees W. The author's track for this storm is shown in Fig. 1. Such a track was terminated on Aug. 21 although there were some indications that the storm existed at least during the next day. According to The New York Times, Aug. 31, 1881, p.3, col.2, the Humburg steamship "Herder" met a heavy N.E. gale on Aug. 22 and the same storm was experienced by the French liner "Canada". The reason for having ended the track on Aug. 21 was that no positions were given by the above mentioned steamers.

The storm seems to have approached or to have even attended hurricane status off the U.S. east coast and south of the Canadian Maritime Provinces.

#### Storm 5, 1881 (Aug. 21-29).

This storm is the same one Neumann et al. (1993) show as Storm 4, 1881. The storm is a well-known hurricane which affected the Georgia-South Carolina coast.

Abundant information was found about this storm: 1) Storm of Aug. 21-26, 1881. Leeward Islands, Georgia and South Carolina. Much destruction and many lives lost. 335 dead in Savannah (Tannehill, 1938). Author's note: The storm existence extended beyond Aug. 26. 2) Aug. 27, 1881. Major hurricane. Georgia and South Carolina. Over 700 killed (Dunn and Miller, 1960). 3) Message from the Office of the Chief Signal Service Officer, Washington, D.C., Aug. 23, 10:15 P.M. "To the press and all sea coast stations in the Atlantic coast: It is reported to the Chief Signal Officer that a hurricane was central last night a short distance N. or N.E. of St. Thomas, West Indies, with a maximum hourly wind of 60 miles; wind backing from N.W. to S.W.; one vessel blown ashore. The information given

is insufficient to determine the path of the storm's center but it will probably move N.W. and unless it recurves to the N.E. will probably reach the South Atlantic coast. While storm signals will not be displayed at present, the Chief Signal Officer considers it advisable to send special warnings to all Atlantic ports and to caution shipping against possible danger from the hurricane for the new two or three days. Hazen" (Monthly Weather Review, Aug. 1881). Author's note: This message was also published in The New York Times, Aug. 24, 1881, p.5, col.2. 4) Havana, Aug. 23. The Spanish consul at St. Thomas telegraphed yesterday that a S.E. cyclone was blowing at Santo Domingo and St. Kitts (The New York Times, Aug. 24, 1881, p.5, col. 2). Author's note: The report of the hurricane blowing at Santo Domingo on Aug. 22 is obviously in error. 5) The brigantine "Princess Beatrix", which arrives from Point-a-Pitre (Guadeloupe) yesterday, was caught in a terrific gale on Aug. 24 at lat. 22 N., long. 67 W. The wind came from the S.W. and S.E. Heavy seas washed over the vessel (The New York Times, Sept. 6, 1881, p.8, col.2). 6) Brigantine "Alphonse" sailed from Cienfuegos (Cuba for New York on Aug. 9. On Aug. 24, off the Florida coast, a strong breeze set in. The following morning the wind shifted to N.E. and increased to a gale. The wind increased in violence and the vessel ran before the gale under bare poles. The vessel was finally abandoned and the crew was picked up by the schooner "M.C.Moseley", which brought them to Charleston (The New York Times, Oct. 10, 1881, p.8, col.3). 7) Schr. "William Douglass", from Baracoa (Cuba), was caught in a N.E. gale for 9 hours on Aug. 26 (The New York Times, Sept. 2, 1881, p.8, col.3 and 4). 8) Schr. "A.L. Palmer", also from Baracoa, encountered a N.E. gale which set in on Aug. 26 and continued for 48 hours (The New York Times, Sept. 2, 1881, p.8, col.3 and 4). 9) Darien, Ga., Sept.3, 1881. The bark "Marianna III" brought the crew of the ship "La Louisiana" which encountered a hurricane on Aug. 26. The latter vessel was waterlogged, her mast cut away, her cabin was gone and the hull was stove in. The vessel had sailed from Pensacola for Liverpool on Aug. 13 (The New York Times, Sept. 3, 1881, p.1, col.3). 10) James E. and Co. has learned that the report regarding that the steamer "Newport" had put into Nassau in distress is untrue. The vessel encountered the hurricane and was hove to for 12 hours but she arrived at Havana last Monday evening (Aug. 29) without having sustained the slightest injury (The New York Times, Sept. 2, 1881, p.8, col.3 and 4). 11) Schr. "Lucie Wheatley" (from Jacksonville for Baltimore) experienced from Aug. 21 to 24, in about lat. 32 N., long. 78 W., heavy cross sea, blowing a hurricane (?). Aug. 26, hurricane increased in fury; threw over deck-load. Aug. 27, noon, vessel full of water, mast swept away (Monthly Weather Review, Aug. 1881). Author's note: Hurricane conditions reported over the period Aug. 21-24 should be in error. 12) Ship "Sandusky", about lat. 32 N., long 76 W., Aug. 26 and 27, experienced a violent storm; vessel was dismasted and all hands but two were drowned (Monthly Weather Review, Aug. 1881). 13) Steamer "Geo. W. Clyde" (from New York for Charleston). Left New York at 4 P.M. Aug. 24; wind S.W. continued from that direction until 7 P.M., when it shifted to N.E. with increasing force. Passed Hatteras at 4 A.M. Aug. 26. 7 P.M., off Cape Fear, wind E.N.E. blowing a hurricane; impossible to run ship

before the wind; hove and headed S.E.; hurricane lasted for 24 hours, reaching its height about 10 P.M. Aug. 26 and continuing to 2 P.M. Aug. 27 with extraordinary violence (Monthly Weather Review, Aug. 1881). 14) The steamship "Pomona" arrived from Port Antonio (Jamaica) and reported that about a fortnight ago, during the outward passage, the ship ran into an E, hurricane (The New York Times, Sept. 16, 1881, p.3, col.2). 15) Galveston, Sept. 6. The "City of San Antonio" left New Orleans on Aug. 23 and encountered heavy weather on the west end of the Gulf Stream. The vessel put into port at Fernandina where stayed for 12 hours. In coming out, the vessel was struck again by the storm and put into Key West where it remained for 5 hours. The storm really lasted 36 hours, although the vessel was in it on Aug. 25, 26 and 27 (The New York Times, Sept. 7, 1881, p.2, col.5 and 6). Author's note: The Monthly Weather Review, Aug. 1881, adds that the "City of (San) Antonio" experienced violent gales off Jacksonville during the night of Aug. 27. 16) Bark "Tupulco". Aug. 27, lat. 30 35 N., long. 77 26 W., violent hurricane from N.E., lost foremast, jibboom, maintopmast and one seaman (Monthly Weather Review, Aug. 1881). Author's note: Either the N.E. wind direction or long. 77 26 W., or both, seemed to be in error. 17) The "City of Macon", which arrived on Tuesday evening, left Savannah last Saturday morning (Aug. 27). After having been a few hours at sea, the ship ran into a N.E. hurricane and a high rough sea (The New York Times, Sept. 1, 1881, p.3, col.2). 18) Steamer "Dessog" (from Savannah to New York). 80 miles E.S.E. of Tybee Island, night of Aug. 27, experienced s violent N.E. hurricane (Monthly Weather Review, Aug. 1881). Author's note: For the position and the N.E. direction which were given by the "Dessog", the vessel should have experienced the hurricane during the night of Aug. 26-27. 19) Steamer "Saragossa" (from Baltimore to Savannah). Left port at 4 P.M. Aug. 25. Morning of Aug. 27, about daybreak, encountered cyclone off Cape Lookout, wind S.E., velocity about 75 mph causing tremendous seas, no abatement in violence until late at night when the wind slightly moderated, but the sea was still rough and exceedingly high. Very early on Aug. 28, gale began to abate, with fine weather and clearing skies; still an ugly cross sea from E. About 8 A.M. (Aug. 28), while to the S. of Cape Romain, experienced heavy cross sea and gale from S.E. (Monthly Weather Review, Aug. 1881). 20) Schr. "Hannah M. Lallis", 3 A.M. Aug. 27, about lat.32 N., long. 78 W., encountered furious N.E. to S.E. gales and was entirely dismasted and most of the crew were drowned (Monthly Weather Review, Aug. 1881). 21) Bark "Robinson Crusoe". Aug. 27, lat. 34 30 N., long. 72 30 W., experienced a violent hurricane from N.E. to S.E. (Monthly Weather Review, Aug. 1881). Author's note: The longitude given appeared to be too far to the E. 22) Bark "Brunswick" on Aug. 23, while over 100 miles E. of Tybee Island, experienced a fierce hurricane from N.E. to S.E.; Aug. 26, violence of the storm increased ; 8 A.M. Aug. 27, gale continued with little abatement; between 5 and 6 P.M., slight lull in tempest followed in a short time by the recurrence of the gale redoubled in fury; 9 P.M., vessel disappeared beneath the waves, carrying down all but three of the crew (Monthly Weather Review, Aug. 1881). Author's note: The hurricane condition described as having occurred on Aug. 23 seemed to be in error. The vessel

appeared to have been near the eye of the storm between 5 and 6 P.M. Aug. 27; this should have happened a short distance to the S.E. of Tybee Island, Ga. 23) Special bulletin to press furnished by the Chief of the Signal Service: A storm disturbance of great intensity is central in the Gulf Stream east of the South Atlantic coast. It is without doubt the St. Thomas hurricane of Monday night (Aug. 22). The slow movement since yesterday indicates that it is now recurving in its track but it is yet uncertain in which direction it will move to the northward. In anticipation of possible danger from this storm, cautionary signals have been displayed from Cedar Keys and Jacksonville, Fla. to Sandy Hook. High N.E. winds already prevail along the South Atlantic coast (The New York Times, Aug. 27, 1881, p. 2, col.4). Author's note: This bulletin should have been issued late on Aug. 26 or early in the morning of Aug. 27. 24) Washington, Aug. 27. The hurricane reported Monday night (Aug. 22) near St. Thomas has pursued a N.W. course and is now entering the South Carolina coast. From this time it will probably follow a more northerly track. This morning the barometer at Charleston was 29.08 inches, a fall of 0.37 inches in 20 hours and 0.20 inches in 8 hours. The special bulletin from the Signal Service says that the storm E. of Charleston has moved slowly to the westward and is now central on the coast (The New York Times, Aug. 28, 1881, p.2, col.5). Author's note: Information contained in items to follow proved that most information given in item 24) is in error. 25) Observations from Tybee Island: Aug. 27, 6:44 A.M. barometer 29.70 inches; 10:44 A.M., barometer 29.61 inches, wind N. 32 mph; 2:44 P.M., barometer 29.44 inches, wind N. 36 mph; 6:44 P.M., barometer 29.30 inches, wind N.N.W. 36 mph; 7 P.M., wind N.E. 35 mph; 8 P.M., wind N.N.E. 48 mph, rain, falling trees; 8:45 P.M., fierce gusts of 60 to 80 mph. from N.E., barometer continued to fall rapidly until 9:20 P.M. , when it reached the minimum of 29.08 inches and it remained about stationary for 20 minutes, pressure then began to rise quickly; 10:44 P.M., barometer 29.17 inches, wind S.E. 50 mph; midnight (Aug. 27-28), barometer 29.34 inches, wind S.E. 36 mph; Aug. 28, 2 A.M., barometer 29.49 inches, wind S.E. 28 mph (Monthly Weather Review, Aug. 1881). 26) Some maximum winds: Smithville, E. 50 mph; Wilmington, E. 27 mph; Ft. Macon, E. 38 mph; Hatteras, N.E. 34 mph; Kittyhawk, E. 32 mph; Cape Henry, N.E. 32 mph; Cedar Keys, S.W. 27 mph; Jacksonville, S.W. 37 mph; Savannah, N.E. 60 mph; Charleston, N.E. 54 mph (Monthly Weather Review, Aug. 1881). 27) Some storm descriptions: Savannah, Aug. 26, threatening, falling barometer, throughout the night the violence of the wind from E.N.E. increased, tide extremely high. Dorchester, Aug. 27, severest hurricane ever experienced. Beaufort (S.C.), violent wind commenced on night of Aug. 26 continuing on the following day in a terrific gale. Fleming, Aug. 27, 9:30 P.M., tremendous gale from E.N.E. Egypt Depot, Aug. 26, tremendous gale with no abatement until the morning of Aug. 28, having reached its height about midnight Aug. 27-28. Jesup, Aug. 27, during the night, violent hurricane. Charleston, (S.C.), Aug. 27, most violent since the storm of Aug. 1874 (it should read Sept. 1874). Liberty County, Aug. 27, most severe storm ever experienced, the extreme violence of the wind and the torrents of rain set in about 9 P.M. and continued till the

following morning. Ft. Pulaski, Aug. 27, the storm raged for 6 hours with demoniac fury (Monthly Weather Review, Aug. 1881). Author's note: Unless indicated, all places above are located in the State of Georgia. 28) Charleston, S.C., Aug. 27. A heavy gale has been blowing from N.E. during the night and shows no sign of abating this afternoon (The New York Times, Aug. 28, 1881, p.2, col.5). 29) Charleston, S.C., Aug. 28. During yesterday and last night the E. gale blew along the coast. At Sullivan Is., the sea-side suburb of Charleston, several cottages were swept away and much damage was done (The New York Times, Aug. 29, 1881, p.5, col.6). 30) The steamship "City of Atlanta", which arrived yesterday, was lying at Adger wharf in Charleston during the hurricane. One of the officers stated that the gale began before daylight (Aug. 27) and the hurricane reached its height at 2 P.M. and continued until midnight (Aug. 27-28), working away a portion of the wharf (The New York Times, Sept. 2, 1881, p.8, col. 3 and 4). 31) Port Royal, S.C. Aug. 29. A hurricane passed over here Saturday night (Aug. 27). A number of persons were in the ferry house waiting for the abatement of the storm when the house was carried away by the high tide (The New York Times, Aug. 30, 1881, p.5, col.4). 32) Augusta, Ga., Aug. 29. A terrific hurricane visited Savannah Saturday night (Aug. 27). The velocity of the wind was about 80 mph. Early in the evening the Signal Service office was unroofed and the city was under water for several hours (The New York Times, Aug. 30, 1881, p.5, col.4). 33) By the morning of Aug., 28, the storm had moved westward over central Georgia (Monthly Weather Review, Aug. 1881). 34) Washington, Aug. 29. The Chief Signal Officer reports that the hurricane which entered South Carolina Saturday morning (Aug. 27), instead of recurving to the N.E. has pursued, with diminishing energy, a track nearly to the west and is now central (night of Aug. 28) in Georgia and Alabama. During the storm 5.91 inches of rain fell at Charleston (The New York Times, Aug. 29, 1881, p.5, col.6). Author's note: Information that the hurricane entered South Carolina Saturday morning is incorrect. 35) On the morning of Aug. 29, the cyclone was near Memphis, the barometer of that station being 0.35 inches below normal (Monthly Weather Review, Aug. 1881). 36) Map showing a track for the storm. At 11 P.M. Aug. 27, it is shown just to the S.W. of Savannah and at 7 A.M. Aug. 29 near Memphis, Tenn. (Monthly Weather Review, Aug. 1881).

Based on information contained in the above items, some modifications were proposed along the track shown in Neumann et al. (1993) as for Storm 4, 1881. Such modifications allowed the author of this study to correct the storm motion along the above mentioned track to have the storm to have passed just to the north of St. Thomas in the night of Aug. 22 as stated in item 3) and to have the storm to have made landfall on the northern Georgia coast in the night of Aug. 27 as clearly shown by the Tybee Island observations in item 25) and also by information in some other items, primarily in items 22), 26) and 36). In order to achieve both goals, it was necessary to adjust the 7 A.M. positions in Neumann et al. (1993) for the period Aug. 21-28 backwards along their track by, on the average, about 90 miles. This procedure resulted in the author's new set of 7 A.M. estimated positions as follows: Aug. 21, 17.7



degrees N., 59.0 degrees W.; Aug. 22, 18.6 degrees N., 63.0 degrees W.; Aug. 23, 20.1 degrees N., 67.0 degrees W.; Aug. 24, 23.0 degrees N., 70.8 degrees W.; Aug. 25, 25.5 degrees N., 74.6 degrees W.; Aug. 26, 28.2 degrees N., 78.2 degrees W.; Aug. 27, 30.7 degrees N., 79.7 degrees W.; Aug. 28, 32.0 degrees N., 83.0 degrees W. The 7 A.M. Aug. 29 estimated position near 34.0 degrees N, 89.0 degrees W. displayed in Neumann et al. (1993) was kept unchanged. The author's track for Storm 5, 1881 is shown in Fig. 1.

According to item 2), Storm 5, 1881 was a major hurricane but the wind and pressure records found by the author were not close enough to the storm center to verify the major hurricane status: no measurements were available from the area about 25 miles to the S.W. of Savannah where the center made landfall during the night of Aug. 27. However, judging from the sequence of observations taken at Tybee Island (item 25), the author of this study believes that the storm was, at least, a moderate hurricane on the Georgia coast. In addition, the relatively short duration of the winds above 60 mph at Tybee Island (item 25) suggests that the hurricane winds were confined to a fairly small area near the center.

Storm 6, 1881 ( Sept. 7-11).

This is the same storm that Neumann et al. (1993) listed as Storm 5, 1881.

The following information was found about this storm: 1) Brigantine "Roseuss", from Aux Cayes (Haiti), arrived at Falmouth yesterday bringing the only survivor of the crew of the vessel "Anne J. Palmer", from Wilmington to Haiti, lost in a hurricane on Sept. 7 (The Times, London, Oct. 12, 1881, p.6, col.1). 2) Norfolk, Va., Sept. 14. Schr. "William Whitehead" put in here in distress and reported having encountered a hurricane on Sept. 8, 200 miles off Hatteras, bearing S. She arrived in jury-mast. Spoke schooner "E.C. Evans", from Fernandina, Fl. to New York. Her sails were lost and, in the same blow, the mate and another man were killed by a broken spar (The New York Times, Sept. 15, 1881, p.2, col.5). 3) Schr. "Lizzie Florence", from St. Augustine, was caught in a violent S.E. gale on Sept. 9 (The New York Times, Sept. 16, 1881, p. 3, col.2). 4) Norfolk, Va., Sept. 16. Schr. "City of Chelsea" reported that on Sept. 9 at lat. 32 54 N., long. 77 30 W. was struck by a tremendous gale and was compelled to cut her masts away (The New York Times, Sept. 17, 1881, p.2, col.6). 5) Wilmington, N.C., Sept. 9. A gale, approximating a hurricane, sprung up in this region tonight, the wind at one time blowing at a rate of 50 miles per hour (The New York Times, Sept. 10, 1881, p.2, col.7). 6) At the morning report of Sept. 9, a sharp fall in pressure and the circulation of the winds showed the existence of a storm center menacing the North Carolina coast. During the day the depression of great energy but of very slight diameter moved in a northerly track toward Norfolk. On Sept. 10, curving slightly to N.E., the storm passed beyond the coast (Monthly Weather Review, Sept. 1881). 7) Maximum winds: Smithville, N.E. 60 mph; Wilmington, W. 64 mph; Macon, S.W. 50 mph; Hatteras, S.W. 42 mph; Kittyhawk, S. 40 mph; Cape Henry, S.E. 35 mph; Norfolk, S.E. 25 mph; Chincoteague, S.E. 32 mph; Barnegat, N. 28 mph; Sandy Hook, N.E. 30 mph (Monthly

Weather Review, Sept. 1881). 8) Early yesterday morning the dense fog which enveloped everything throughout the night disappeared and at 9:10 A.M. light rain began to fall. When it ceased at 11:50 A.M., the rain gauge of the Weather Bureau of this city (New York) indicated 0.03 of an inch. After the evening showers, a fall of 0.31 inches was recorded. The wind was variable during the day (Sept. 10), at 7 A.M. blowing from the E., at 11 A.M. from the S.E. and from 3 P.M. to 10 P.M. from the N.E., ranging from 11 to 26 mph (The New York Times, Sept. 11, 1881, p.7, col.4). 9) Wind: sunset (Sept. 10); at Sandy Hook, light E., cloudy and foggy; at City Island, fresh N.E., rain (The New York Times, Sept. 11, 1881, p.12, col.5). 10) Map showing a track for the storm. Selected positions along the track are near Wilmington at 3 P.M. Sept. 9 and near 37.5 degrees N., 75.7 degrees W. at 3 P.M. Sept. 10 (Monthly Weather Review, Sept. 1881).

The information which is contained in items 1) through 10) indicates that the track shown in Neumann et al. (1993) as for Storm 5, 1881 is, in general, reasonable and, therefore, it was adopted by the author of this study and reproduced in Fig. 1.

Based on information in item 6), Storm 6, 1881 seems to have been a small-size hurricane.

#### Storm 7, 1881 (Sept. 18-24).

This is a new storm case which has been recently documented by the author of this study.

Documentation of this storm was based on the following information: 1) Bark "J.E. Fisher", from Bilbao (Spain), reported that after encountering W. winds all the way to the Banks, the wind changed to E. and increased to a terrific gale on Sept. 18. The sea became very heavy and the gale continued for 12 hours. On Sept. 20 spoke schooner "J.H. Kranz" bound for Philadelphia, at lat. 39 N., long. 70 W. The bark reached Quarantine late Saturday, Sept. 24 (The New York Times, Sept. 26, 1881, p.3, col.5). 2) The steamship "City of London" arrived from London yesterday, Sept. 20, lat. 42 N., long. 55 W., the wind increased into a heavy gale; it changed from S.W. to N.W. and blew with great violence for 12 hours (The New York Times, Sept. 25, 1881, p.10, col. 5). 3) The "Nestorian". from Montreal, arrived at Liverpool and reported that from Sept. 22 to 24 experienced very heavy weather (The Times, London, Sept. 30, 1881, p.10, col. 6). 4) The "City of Montreal" left Queenstown (Ireland) on Sept. 21. On Sept. 23 a strong breeze accompanied by rain set in and on Sept. 24 increased to a gale accompanied by high head seas. On Sept. 26 there were still high westerly swells on the ocean (The New York Times, Oct. 3, 1881, p.5, col.5 and 6). 5) The "Britannic", also from Queenstown (Ireland), left on Sept. 23. A fresh breeze blew on Sept. 24 and a gale blew on Sept. 25. During the next 24 hours the sea was very high and violent and the wind blew steadily from the west (The New York Times, Oct. 3, 1881, p.5, col.5 and 6). 6) Local weather chart for 6 P.M. Sept. 25 showing low pressure below 29.80 inchess to the N.W. of Ireland (The Times, London, Sept. 26, 1881, p.7, col.5).

Based on information in item 1), the author of this study estimated a 7 A.M. Sept. 18 position for the storm near 37.5

degrees N., 67.5 degrees W. His 7 A.M. Sept. 19 estimated position near 41.0 degrees N., 62.0 degrees W. was based on interpolation along a smooth curve joining estimated positions for Sept. 18 and Sept. 20. The 7 A.M. Sept. 20 position near 43.7 degrees N., 55.0 degrees W. was estimated on the basis of information in item 2). Items 3) through 5) as well as space-time continuity were used in estimating 7 A.M. positions for the period Sept. 21-24. These positions are as follows: Sept. 21, 46.3 degrees N., 47.5 degrees W.; Sept. 22, 48.5 degrees N., 40.3 degrees W.; Sept. 23, 51.0 degrees N., 31.5 degrees W.; Sept. 24, 53.5 degrees N., 23.5 degrees W. In spite of the information contained in item 6), no position was estimated for 7 A.M. Sept. 25 because the author noticed that such a position would be off the map area in Fig. 1. Therefore, he decided to prepare a track for the storm which was started on Sept. 18 and ended on Sept. 24. Such a track is displayed in Fig. 1.

The author did not find evidence that the storm reached full hurricane intensity. However, judging from the state of the sea reported in several items, indications are that the storm winds might have approached hurricane force.

Storm 7, 1881 should have had gradually become extratropical while moving east-northeastward over the northern Atlantic between America and Europe.

Storm 8, 1881 (Oct. 5-6).

This storm corresponds to Storm 6, 1881 in Neumann et al. (1993).

The following information was found about this weather system: 1) Storm at Jacksonville on Oct. 6, 1881 (Tannehill, 1938). 2) Storm at Jacksonville on Oct. 1881. Intensity unknown. "Questionable" (Dunn and Miller, 1960). 3) Charleston, S.C., Oct. 6. A telegram from northern South Carolina to the News and Courier this morning reports frost last night and that another is expected tonight (The New York Times, Oct. 7, 1881, p.5, col.5). 4) Raleigh, N.C., Oct. 6. There was frost here last night, the first of the season (The New York Times, Oct. 7, 1881, p.5, col.5).

Based upon information in items 2) through 4), the author of this study is skeptical about the existence of this storm, at least as of its alleged tropical nature. However, he has not found any undisputable evidence against the storm either. Therefore, he decided to keep the storm on record by reproducing in Fig. 1 the track shown by Neumann et al. (1993) as for Storm 6, 1881.